

SUCCESSFUL NESTING BY A PAIR OF BALD EAGLES AT  
AGES THREE AND FOUR

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Sexual maturity in the bald eagle (*Haliaeetus leucocephalus*) is commonly thought to occur after the bird attains a completely white head and tail, typically at age 4 yr (Clark and Wheeler 1987). Various factors probably influence initial reproductive attempts by individual eagles, so plumage is not always a reliable indicator of age or reproductive readiness (McCullough 1989). In 1993, a pair of bald eagles in subadult plumage nested in eastern Kansas. The nesting pair consisted of a 4-yr-old male and 3-yr-old female, and they successfully fledged one eaglet.

#### OBSERVATIONS

The nesting eagles were found at Hillsdale Reservoir in eastern Kansas, 40 km south of Kansas City. The pair occupied a nest in a large dead tree standing in water. They were first observed on the nest on 25 March 1993. Each bird wore a standard U.S. Fish and Wildlife Service aluminum band on one leg and a colored band on the opposite leg, and could thus be traced to its origin. The male parent was one of two males fledged in 1989 from a nest approximately 45 km northwest of the Hillsdale nest site. That was the first year bald eagles were documented nesting in Kansas since presettlement; Goss (1891) reported the bald eagle as resident in Kansas, with egg laying beginning in March, but provided no information on specific nests or locations. This eagle and its sibling fledged 16 July 1989, and were live trapped and banded 23 July. They left the area 9 August 1989, and neither was reported again until 1993.

The female hatched 16 January 1990 at the G.M. Sutton Avian Research Center in Bartlesville, Oklahoma, from an egg taken from a nest in Osceola County, Florida. She fledged 8 April from a hack tower at Eufaula Reservoir in eastcentral Oklahoma, approximately 345 km south of the Hillsdale nest, and was last seen in the area on 29 May 1990. She was not reported again until 1993. Radiotracking of previously hatched eagles by Sutton Center personnel indicate they sometimes initially disperse north as far as Canada.

We saw the parents exhibiting nestling feeding behavior on 7 and 8 April, but no eaglets were visible. No subse-

quent feeding behavior was observed over the next several days until 16 April, when one parent was observed feeding a small chick. We do not know if it was the same eaglet fed on 7 April.

The eagles were monitored periodically from April through June. Between 25 and 29 June the eaglet fledged, and was last seen at the reservoir on 17 July. High water levels in the reservoir during much of July and early August prevented adequate monitoring, so we do not know the actual departure date.

Reports of nesting by bald eagles in subadult plumage are rare. Hoxie (1910) reported successful reproduction by a pair in which both birds were in immature plumage, though the female was "beginning to show distinct traces of white in the tail." One hacked bird in Saskatchewan may have bred when only 3 yr old (Gerrard and Bortolotti 1988), and Hatcher (1991) reported successful nesting by a 3-yr-old male released in Tennessee. There are infrequent reports of birds in subadult plumage mating with an adult (Bent 1937, Stalmaster 1987). Sherrod et al. (1976) reported two different females in "eye-stripe" plumage that mated with males in adult plumage; one female laid eggs that did not hatch, but the other successfully produced two eaglets. "Eye-stripe" plumage, believed to "precede that of adult," is described as a basically white head with a brown eye stripe, and a white tail with brown banding or blotching (Sherrod et al. 1976). This plumage is analogous to subadult plumage E reported for bald eagles by Stalmaster (1987). We observed a pair at another reservoir in eastern Kansas in 1993, one of which showed plumage similar to subadult E. This pair appeared to be incubating, but for unknown reasons abandoned the nest prematurely.

Hancock (1973) reported that three of four pairs of adult bald eagles that eventually hatched eggs in captivity produced infertile eggs their first year of nesting, and no fertile eggs were produced until both parents were at least 5 yr old. Maestrelli and Wiemeyer (1975) speculated that the initial failure to reproduce by a captive 5-yr-old male and an 8-yr-old female was due to the male's physical immaturity. Captive bald eagles and golden eagles (*Aquila chrysaetos*) may attain adult plumage and begin reproducing later than wild birds, possibly due to diet and other factors (Jollie 1947, McCullough 1989).

Sandeman (1957) reported that subadult golden eagles sometimes occupy territories, form pairs, and construct nests, but generally produce no eggs. However, Teresa

(1980) reported an adult and a bird in subadult plumage which fledged two young. Teresa (1980) also stated that breeding by subadults in most eagle species occurs only under unusually favorable or unfavorable conditions. In Kansas, recent bald eagle nestings occurred after many decades of absence, and many suitable nesting sites are available. This may be creating an unusually favorable condition for population growth.

The bald eagle nest at Hillsdale Reservoir provided a unique opportunity to observe known-age birds in their first nesting attempt and to document plumage characteristics in wild birds of known age. The plumage of the male was virtually identical to subadult plumage E described by Stalmaster (1987). The plumage of the female closely matched Stalmaster's subadult plumage D. Had we not known this bird's age, we might have concluded that she was a 4-yr-old in delayed plumage. That conclusion would have been reinforced by her nesting success. The origin of the 4-yr-old male, a product of the first Kansas nest documented since presettlement, indicates the importance of ensuring breeding success by bald eagles initially colonizing a nesting area.

**RESUMEN.**—Una pareja de individuos de la especie *Haliaeetus leucocephalus* con plumaje subadulto establecieron un territorio de nidificación sobre una reserva al este de Kansas y en la primavera de 1993. Ambos individuos tenían anillos coloreados en sus patas, las que permitieron conocer sus edades y lugares de origen. El macho de cuatro años de edad, con plumaje de volanton en 1989, correspondiente al primer nido activo documentado en Kansas desde la precolonización. La hembra de tres años de edad, fue registrada en Oklahoma en 1990. La pareja empolló exitosamente un polleulo.

[Traducción de Ivan Lazo]

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#### LITERATURE CITED

- BENT, A.C. 1937. Life histories of North American birds of prey. Part I. U.S. Natl. Mus. Bull. 167.
- CLARK, W.S. AND B.K. WHEELER. 1987. A field guide to hawks. Houghton Mifflin Company, Boston, MA U.S.A.
- GERRARD, J.M. AND G.R. BORTOLOTTI. 1988. The bald eagle; haunts and habits of a wilderness monarch. Smithsonian Inst. Press, Washington, DC U.S.A.
- GOSS, N.S. 1891. History of the birds of Kansas. G.W. Crane & Co., Topeka, KS U.S.A.
- HANCOCK, D. 1973. Captive propagation of bald eagles *Haliaeetus leucocephalus*—a review. *Int. Zoo Yearb.* 13:244-249.
- HATCHER, R.M. 1991. Computer model projections of bald eagle nesting in Tennessee. *J. Tenn. Acad. Sci.* 66:225-228.
- HOXIE, W.J. 1910. Notes on the bald eagle in Georgia. *Auk* 27:454.
- JOLLIE, M. 1947. Plumage changes in the golden eagle. *Auk* 64:549-576.
- MAESTRELLI, J.R. AND S.N. WIEMEYER. 1975. Breeding bald eagles in captivity. *Wilson Bull.* 87:45-53.
- MCCOLLOUGH, M.A. 1989. Molting sequence and aging of bald eagles. *Wilson Bull.* 101:1-10.
- SANDEMAN, P.W. 1957. The breeding success of golden eagles in the northern Grampians. *Scott. Nat.* 69:148-152.
- SHERROD, S.K., C.M. WHITE, AND F.S.L. WILLIAMSON. 1976. Biology of the bald eagle on Amchitka Island, Alaska. *Living Bird* 15:143-182.
- STALMASTER, M.V. 1987. The bald eagle. Universe Books, New York, NY U.S.A.
- TERESA, S. 1980. Golden eagles successfully breeding in subadult plumage. *Raptor Res.* 14:86-87.

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